



Open data and open access as an opportunity in bioscience research: the contribution of H2020 STARBIOS2 project

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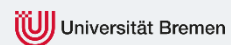
Structural Transformation to Attain Responsible BIOSciences: STARBIOS2

The general aim is contributing to the advancement of the **Responsible Research and Innovation** (RRI) strategy, by:

- Promoting 6 **Action Plans** (APs) oriented to attain a RRI **structural change** in research institutions from Europe
- Developing 3 further APs in non-European entities
... all active in the field of **Biosciences**



Consortium





The risk and a possible solution for biosciences today

STARBIOS2 try to cope with one of the main risks, for European research:

Its **inadequate connection with society**

RISK

promote **increase alignment**, in terms of both process and outcomes, with the **needs and values of European society**.

This entails an increasing **involvement of stakeholders** at any level of the research and innovation process

POSSIBLE SOLUTION



What is the “Responsible Research and Innovation”?

RRI

a tool for reacting against the crises of
European -and not only European- sciences

RRI

the idea that sciences are a tool for
promoting change and innovation



What is meant by RRI?

RRI is an inclusive approach to research and innovation (R&I), to ensure that **societal actors work together** during the whole research and innovation process.

It aims to better align both the **process and outcomes** of R&I, with the values, needs and expectations of European society.



Responsible Research and innovation

SCIENCE WITH AND FOR SOCIETY

- *RRI regards the management of relationships between **Science & Technology** (S&T) and the **civil society**.*
- *In very general terms, the "vision" that we think guides RRI practice, consists in **promoting "better S&T for society"**.*
- In this context, the relationship between S&T and civil society is important but more important is the **support a conscious WAY to make scientific questions and research and innovation activities** carried out.
- As a consequence, S&T must be able to look at its possible **developments and effects**.
- The whole activity of research and innovation must be carried out with this **awareness** and this can happen starting from this **sensitivity**.
- The RRI Model for Biosciences has to do with the practice of this orientation.



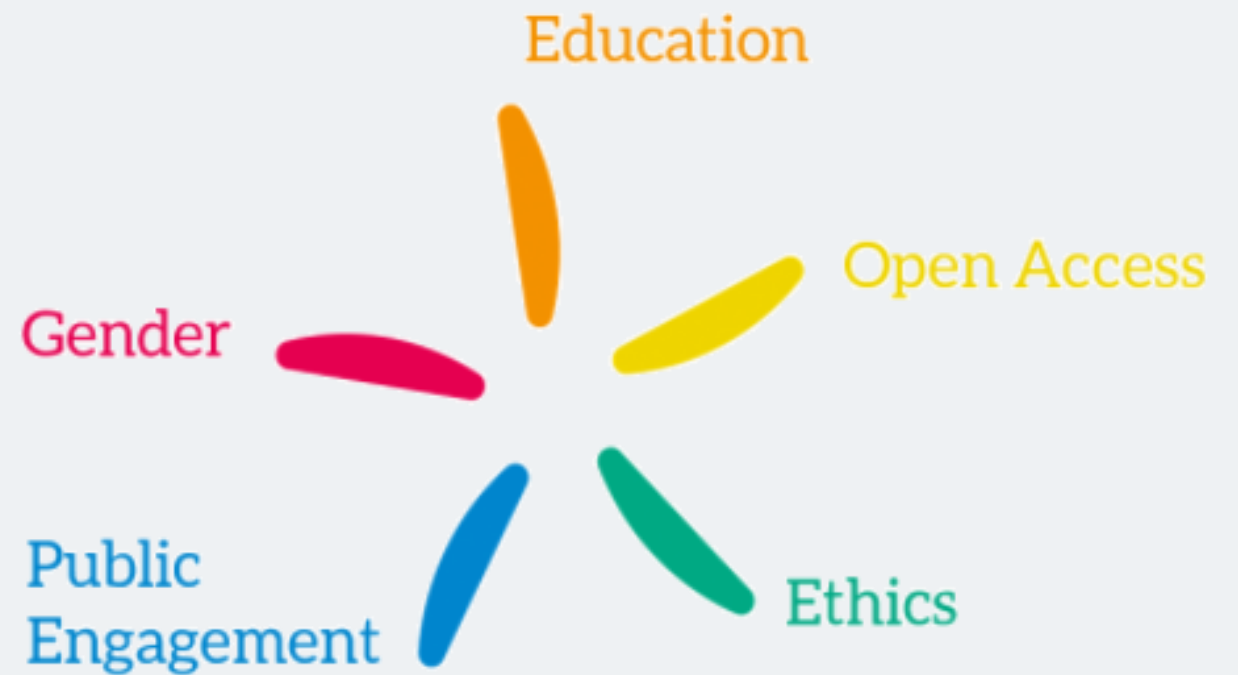
The 5+1 keys of RRI

In all definitions of RRI, the **five keys** appear as areas through which the **RRI orientation** is put into **practice**.

- In the context of a critical interpretation of the RRI, the 5+1 keys are the areas of the **life of scientists** in which the **criticalities** of the science/society relations **are more evident**.
- These 5 areas also appear to be those in which the relationship between **science** and **society** meets the greatest **difficulties** and **require intervention**.



The 5 keys





The 5 keys

RRI consists of designing and implementing R&I policy that will:

- **engage society** more broadly in its research and innovation activities
- increase **access** to scientific results
- ensure **gender** equality, in both the **research process** and **research content**
- take into account the **ethical** dimension
- promote formal and informal **science education**





Public engagement

Public engagement is the area in which the scientific community

- «comes out»,
- compare yourself with others social actors,
- present its scientific results,
- negotiate its needs and the indications that follow.

In the context of societal engagement scientific communities justify and express the reasons for their request for resources and funds for their activities.



Gender

Gender issues, are very relevant for RRI and the **Biosciences** are affected in a peculiar way by them.

Strong presence of women in the sector but this does not imply the lack of gender **discrimination**.



From the point of view of scientific content, Biosciences is a sector in which the **sexual variables** are of the utmost importance even if this fact has not fully impacted the scientific practice yet.





Ethics



- Ethical issues are an area of difficulty because they have to do with the way in which the Scientific Research and Technology (SRT) is subject to **critical exam of produced advances**, assessing the **possible damages**, the **adequacy** to the existing regulatory systems.
- This type of scrutiny is becoming the context in which the various scientific communities are likely to encounter increasing difficulties in the relationship with **external actors**.
- The ethical question is also connected to the **method used** to make its research procedures and results publicly available and is therefore connected to the Open Access issue.



Education



- Education is a crucial area in which the management of the relationship between science and society is exercised.
- Scientific education is oriented to produce the **new generation of scientists** (who are aware of RRI), and it is also aimed to create an audience of **citizens that knows and recognizes** the characteristics of the scientific enterprise and the impact that this produces at the technological, social and economic level.
- The risk for citizens is that their **basic scientific competences decrease** - also because the educational models welcome attitudes of distrust – and consequently they will encounter difficulties in the exercise of technological responsibility



..... any place or event good for science divulgation



**From seed to the tree:
how does it grow?**

**The trees??
How do they eat and drink?
Floema?
Xilema?
Whaaaat???**



**Comparative anatomy:
fish mouth skeleton!**



**Prevention of sexually
transmitted Diseases**

Green Festival in Rome
Night of researchers 2018





Responsible Research and Innovation in STARBIOS2

- Devise metrics for women's advancement
- Gender Medicine
 - Malnutrition
 - Pregnancy
 - New-borns
 - STD



Gender



Public
Engagement

- Expand capacity for Citizens and Public Involvement (PPI)
- Galenic course
- Collaboration with experts



- Raise awareness of RRI in biomedical research
- Train courses

Education



Open Access



- Improve access to research findings
- Knowledges sharing
- Expertise *Olea europea*
- Collaboration with other scientific groups



Ethics



- Evaluate the current ethics procedures
- Safe drugs
- Local and traditional medicines



STARBIOS2



Open Access



Open access is important because it concerns scientific communication.

The scientific community look at the circulation of the produced knowledge and on the consequent continuous critical revision as a real imperative.

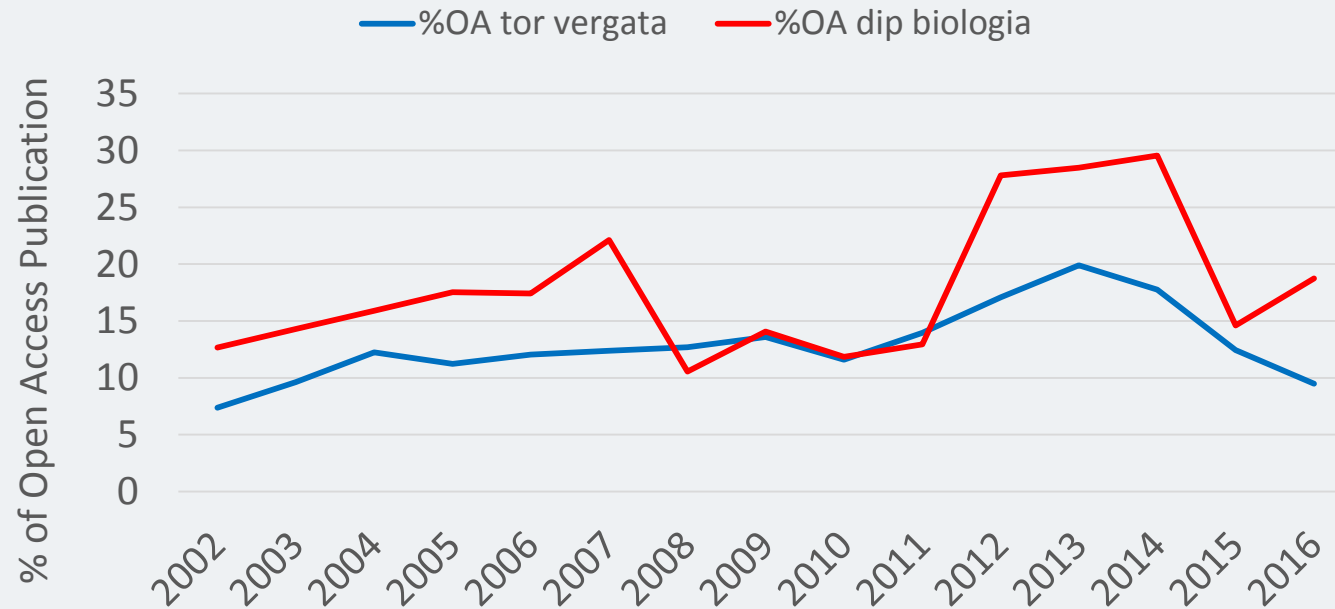
The modalities with which this process takes place, and the limitations set by the business models existing in the sector, are of the utmost importance.

They concern not only the possibility of producing knowledge accumulation but also the evaluation of the careers of scientists.



STARBIOS2 products

Open Access Publication in Department of Biology and University of Rome Tor Vergata (as whole)





OA in the general framework of transition of science

*The **general picture** in which STARBIOS2 reflection is framed, that is connected to the issue of deep changes that are challenging and transforming Science in the so called “post-modern society”*

- Raising **problems and opportunities** to govern (the changes are already happening!) which require a modernisation of the present research Institutions and their “policies”
- Need to rethink the role of publishing in the **Digital era** ...
- ...to **improve the impact** of research results to Society
- ...to make visible the “**lost science**” (i.e. from developing countries...)
- ...to support new generation of researcher in the **adoption of new approaches anchoring OA in the career paths...**
- ...to improve the **advancement of science** fostering the access to scientific results in real time for the biosciences at international level
- ...to **update the existing policies** within the research organisation supporting the transition from OA to Open Science
- ...





The Open Science and Open Access practice give high opportunity to share rapidly a huge number of information.



OPEN ACCESS → open dialogue within the scientific community →
forge of ideas → Rapid development of ideas and projects → Increased
collaborations



On the other hand the wide diversity of the actors being active in the biosciences is making Open Access more and more critical:



while the need for enlarging the circulation of scientific results remain unchanged, other challenges emerge...

... the protection of the Intellectual Property of such results given the potential economic value they possibly have.



Open access gives equality: the cost problem

Transformation of a scientific publication into a business, into a currency of exchange: more you publish in the best magazines, more funding you will receive.

In theory, a merit-based mechanism that, in practice, gives the careers of researchers and the fate of research fields into the hands of publishers.

(<https://www.theguardian.com/science/2017/jun/27/profitable-business-scientific-publishing-bad-for-science>. Guardian)





STARBIOS2 products

CASE FROM PRACTICAL EXPERIENCE

The open access issue is new for some research institutes. One of the STARBIOS2 Action Plan started to work in this field through exploring the state of the art of this key issue at the national level. This analysis was proven to be very useful for the detailed design of the AP. In fact it allowed to identify and create connections with national contact points responsible for OA, network of experts, and similar project carried out in other university and research institute of the same country. In this way the AP benefitted of a wide array of information, knowledge and resources for its design and implementation rather than starting from scratch.



Structural Transformation to Attain Responsible BIOSciences
(G.A. n. 709617)

H2020-ISSI-2015-1
Supporting structural change in research organisations to promote
Responsible Research and Innovation

Work programme 'Science with and for society'

THE GUIDELINES AND A MODEL ON RRI IMPLEMENTATION IN BIOSCIENCES STRUCTURES

MAY, 2019





STARBIOS2 products

- Evaluating open access at Oxford University and developing a framework for comparison (January 2018 to April 2020)



✓ Significant result: Open Access training and video



<https://youtu.be/IPLosIV5HkA>





Research is always based on the results of previous research

Isaac Newton

The access to scientific publications is a prerequisite for any research activity.

Open Access provides the free and unrestricted access to scientific publications via the internet.

This is not just a **benefit** for the research community itself, but also for the **society as a whole**: every interested person has access to scientific research results.



Thank you!



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